Final Technical Report

A.Y. Cheer[1] and C.P. van Dam[2]

(a) Institution: University of California,
[1]Department of Mathematics,
[2]Department of Mechanical, Aerospace and Materials Engineering,
Davis, CA 95616-8633

(b) Title: Workshop on Biofluiddynamics

(c) Final Report, covering the period 9/1/90 to 8/31/91

(d) NASA Grant No: NASA NAGW-2369

(e) A.Y. Cheer and C.P. van Dam, Principal Investigators

A workshop on biofluiddynamics was held July 6-12, 1991 at the Univeristy of Washington, Seattle. This workshop was part of the Joint Summer Research Conferences sponsored by the American Mathematical Society, the Institute of Mathematical Statistics and the Society of Industrial and Applied Mathematics. This workshop was organized to provide biologist, engineers, mathematicians and physiologists a forum to discuss problems of mutual interest leading to effective collaboration on research projects with an emphasis on problems involving fluid flows in biology. A list of participants is enclosed in Appendix A.

Feedback from the participants regarding the workshop was very favorable. Unsolicited comments from the participants include: " The Biofluiddynamics Workshop was fabulous. It had just the right mix of people and types. There was a wonderful symbiosis of people and ideas great interaction." Another participant writes "I thoroughly enjoyed the talks and especially the chance to interact with many of the leaders in the field of biofluiddynamics who I had not previously met. It was without a doubt the best conference I've been to in many years". These are typical of the comments received from the participants. The success of this workshop can be summarized nicely by a comment we received from yet another participant who writes " I want to thank you for running such an excellent conference. All the participants I spoke with thought it was one of the better ones they'd been to".

In addition to spawning new ideas and collaborations, a volume containing most of the papers that were presented at the workshop appeared in March 1993. This volume entitled "Fluid Dynamics in Biology", is published by the American Mathematical Society as part of their Contemporary Mathematics Series (Volume 141). A copy of the title page and the table of contents is included in Appendix B. Although this volume has been available for only about a month we are already receiving very favorable comments from the biofluids research community. Some instructors have informed us that parts of the volume have been assigned as required reading for their students.

APPENDIX A

Registered List of Participants
as of
July 8, 1991

Biofluidynamics

Angela Cheer (University of California, Davis), Co-Chair
C. P. van Dam (University of California, Davis), Co-Chair

July 6 to July 12, 1991

Stanley A. Berger
Department of Mechanical Engineering
University of California
Berkeley, CA 94720
email: saberger@euler.berkeley.edu
Arrival: 7-6-91
Departure: 7-11-91

Michel Boudrias
Marine Biology Research Divison
SIO,0202, U.C.S.
Scripps Ins. Oceanography
La Jolla, CA 92093
email:
Arrival: 7-6-91
Departure: 7-11-91

Angela Y. Cheer
Department of Mathematics
University of California, Davis
Davis, CA 95616
email: aycheer@ucdavis.edu
Arrival: 7-6-91
Departure: 7-12-91

H. K. Cheng
Department of Aerospace Engineering
University of Southern California
2335 Westridge Road
Los Angeles, CA 90089-1191
email: cheng@spock.usc.edu
Arrival: 7-6-91
Departure: 7-11-91

Douglas A. Craig
Department of Entomology
University of Alberta
Edmonton, Alberta T6G 2E3,
Canada
email:
Arrival: 7-6-91
Departure: 7-12-91

Tom L. Daniel
Department of Zoology
University of Washington
Seattle, WA 98195
email: daniel t@u.washington.edu
Arrival:
Departure:

Horacio J. de la Cueva
Department of Zoology
University of British Columbia
Vancouver, B.C., V6T 2A9,
Canada
email: delacueva@bdc.ubc.ca
Arrival: 7-6-91
Departure: 7-12-91

Kai Deng
Redbud 1607
Department of Mathematics
Indiana University
Bloomington, IN 47405
email: kdeng@iubacs
Arrival: 7-5-91
Departure: 7-12-91

Mark W. Denny
Hopkins Marine Station
Oceanview Avenue
Stanford University
Pacific Grove, CA 93950
email:
Arrival: 7-7-91
Departure: 7-12-91

Cahit A. Evrensel
Department of Mechanical Engineering
University of Nevada, Reno
Reno, NV 89557
email:
Arrival: 7-7-91
Departure: 7-12-91

Lisa J. Fauci
Department of Mathematics
Tulane University
New Orleans, LA 70118
email: ljf@math.tulane.edu
Arrival: 7-6-91
Departure: 7-11-91

Aaron L. Fogelson
Department of Mathematics
University of Utah
Salt Lake City, UT 84112
email: fogelson@math.utah.edu
Arrival: 7-8-91
Departure: 7-12-91

David Halpern
Department of Biomedical Eng.
Northwestern University
2145 Sheridan Road
Evanston, IL 60208
email: halpern@casbah.acns.nwu.edu
Arrival: 7-6-91
Departure: 7-12-91

Huaxiong Huang
I. A. M.
University of British Columbia
121-1984 Mathematic Rd.
Vancouver, B.C. V6T 1W5
CANADA
email: hua@mtsg.ubc.ca
Arrival: 7-6-91
Departure: 7-8-91

Tetsuro Kamada
Dept. of Laboratory Medicine
Kagoshima University
1208-1 Usuki-cho
Sakuragaoka 8-35-1, Kagoshima 890
Japan
email:
Arrival: 7-5-91
Departure: 7-12-91

Cetin Kiris
Applied Computational Fluid Dynamics
NASA - Ames Research Center
Mail Stop N258-1
Moffett Field, CA 94035
email: kiris@uk219.nas.nasa.gov
Arrival: 7-7-91
Departure: 7-11-91

M.A.R. Koehl
Department of Integrative Biology
University of California
Berkeley, CA 94720
email:
Arrival: 7-6-91
Departure: 7-12-91

D. Kwak
Applied Computational Fluids Branch
N. A. S. A., Ames Research Center
Moffett Field, CA 94035
email:
Arrival: 7-7-91
Departure: 7-11-91

Mike LaBarbera
Dept. of Organismal Biology & Anatomy
University of Chicago
1025 East 57th Street
Chicago, IL 60637
email:
Arrival: 7-6-91
Departure: 7-11-91

Harold Layton
Department of Mathematics
Duke University
Durham, NC 27706
email: layton@math.duke.edu
Arrival: 7-6-91
Departure: 7-13-91

Alexander B. Leonard
Marine Biology Research Divison
Scripps Institute of Oceanography
9500 Gilman Drive
La Jolla, CA 92093
email: aleonard@ucsd.edu
Arrival: 7-7-91
Departure: 7-11-91

J.W. Lighthill
Department of Mathematics
University College London
Gower Street
London WC1E 6BT,
United Kingdom
email:
Arrival: 7-6-91
Departure: 7-11-91

Catherine Loudon
Dept. of Integrative Biology
University of California
345 Mulford Hall
Berkeley, CA 94720
email:
Arrival: 7-6-91
Departure: 7-11-91

A. Mayo
T. J. Watson Research Center
I. B. M.
Box 218, 33-229
Yorktown Heights, NY 10598
email: amayo@ibm.com
Arrival: 7-6-91
Departure: 7-12-91

John H. McMasters
Department of Aerodynamics Laboratory
Boeing
Seattle, WA 98124
23924 115th Ave SW
Vashon Island, WA 98070
email:
Arrival: July 8, 1991
Departure:

Masatoshi Murase
Division of Information Dynamics
Tokyo Metropolitan Inst. of Gerontology
Tokyo, 173
JAPAN
email:
Arrival: 7-6-91
Departure: 7-12-91

Charles S. Peskin
Department of Mathematics
Courant Institute of Mathematical Sciences, NYU
New York, NY 10012
Courant Institute
251 Mercer St.
New York, NY 10012
email: perkin@cims-nyu.edu
Arrival: 7-6-91
Departure: 7-12-91

E. Bruce Pitman
Department of Mathematics
SUNY at Buffalo
106 Diefendorf Hall
Buffalo, NY 14214
email: pitman@galileo.math.buffalo.edu
Arrival: 7-6-91
Departure: 7-12-91

Jeremy M. V. Rayner
Department of Zoology
University of Bristol
Woodland Road
Bristol BS8 1UG,
United Kingdom
email: j.m.v.rayner@uk.ac.bristol
Arrival: 7-6-91
Departure: 7-12-91

Laurie Sanderson
Inst. of Theoretical Dynamics
University of California
Davis, CA 95616
email: slsanderson@ucdavis.edu
Arrival: 7-6-91
Departure: 7-12-91

Tim W. Secomb
Department of Physiology
University of Arizona
Arizona Health Science Center
Tucson, AZ 85724
email: secomb@rvax.ccit.arizona.edu
Arrival: 7-6-91
Departure: 7-12-91

Ram Shanmugam
Department of Mathematics
University of Colorado
1200 Larimer Street
Denver, CO 80204
email: shannugam@cudnuv.
Arrival: 7-6-91
Departure: 7-12-91

Geoffrey R. Spedding
Dept. of Aerospace Engineering
University of Southern California
Los Angeles, CA 90007
email: spedding@condor.usc.edu
Arrival: 7-6-91
Departure: 7-12-91

Adrian L. R. Thomas
Department of Zoology
University of Cambridge
Downing Street
Cambridge CB2 3EJ,
England
email:
Arrival: 7-6-91
Departure: 7-12-91

C. P. Van Dam
Dept. of Mechanical, Aero. & Mat. Eng.
University of California, Davis
Davis, CA 95616
email:
Arrival: 7-6-91
Departure: 7-11-91

D. Weihs
Department of Aerospace Eng.
Technion-Israel Inst of Technology
3200 Haifa,
Israel
email: aer95020@technion
Arrival: 7-6-91
Departure: 7-12-91

Clement Gary Yam
Dept of Mechanical, Aer. & Materials Eng.
University of California
Davis, CA 95616
email:
Arrival: 7-7-91
Departure: 7-11-91

APPENDIX B

CONTEMPORARY MATHEMATICS

141

Fluid Dynamics in Biology

Proceedings of an
AMS-IMS-SIAM Joint Summer Research Conference
held July 6–12, 1991 with support from
the National Science Foundation
and NASA Headquarters

A. Y. Cheer
C. P. van Dam
Editors

American Mathematical Society
Providence, Rhode Island

Contents